

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

BRAINTREE LABORATORIES, INC.
and SEBELA US INC.,

Plaintiffs,

v.

LUPIN LIMITED and LUPIN
PHARMACEUTICALS, INC.,

Defendants.

CIVIL ACTION NUMBER:

23-cv-2853-CPO

SCIENCE DAY PRESENTATION

Mitchell H. Cohen Building & U.S. Courthouse
4th & Cooper Streets
Camden, New Jersey 08101
October 15, 2024
Commencing at 12:06 p.m.

B E F O R E:

THE HONORABLE CHRISTINE P. O'HEARN,
UNITED STATES DISTRICT JUDGE

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1 (Proceedings held in open court before The Honorable
2 Christine P. O'Hearn, United States District Judge, at 12:06
3 p.m.)

4 THE COURTROOM DEPUTY: All rise.

5 THE COURT: Okay. Please be seated. We're on the
6 record in the matter of Braintree Laboratories vs. Lupin
7 Limited, 23-cv-2853.

8 May I have appearances of counsel, starting with
9 plaintiffs.

10 MR. MILLER: Good afternoon, Your Honor. Keith Miller
11 from the law firm of Robinson Miller, Newark, New Jersey, for
12 the plaintiffs.

13 Also with me are my co-counsel from Wilmer Hale,
14 Christopher Noyce.

15 MR. NOYCE: Good morning, Your Honor.

16 MR. MILLER: Lisa Pirozzolo.

17 MS. PIROZZOLO: Good morning, Your Honor.

18 MR. MILLER: Gabe Rosanio.

19 MR. ROSANIO: Good morning, Your Honor.

20 MR. MILLER: And Lauren Matlock-Colangelo.

21 MS. MATLOCK-COLANGELO: Good morning.

22 THE COURT: Good morning. And for defendants?

23 MR. RICHTER: Good afternoon, Your Honor. James
24 Richter from Midlige Richter on behalf of Lupin.

25 And with me today are my co-counsel from the Knobbe

1 Martens firm, William Zimmerman and Brian Barnes.

2 THE COURT: Thank you everyone for coming early. I
3 will tell you that I have a criminal matter that I have to
4 cover for the Chief at 1:30, so hopefully that may come between
5 the break of your presentations. And if not, we'll break at an
6 appropriate time.

7 And I'll just ask you to step back. It's a
8 non-detained defendant, he'll come forward, I'll take the plea.
9 You're welcome to leave the courtroom. It will take me
10 30 minutes, and then we'll finish. I apologize. But it's a
11 criminal matter and it has to be done today.

12 But thank you for coming in. Just give me one second.

13 (Brief pause.)

14 THE COURT: Okay. I have all your briefs. Is
15 plaintiff ready to proceed?

16 MR. NOYES: We are, Your Honor.

17 THE COURT: All right. Thank you.

18 MR. NOYES: And, Your Honor, I have some printed
19 copies of slides, if that would be helpful.

20 THE COURT: Okay. Great.

21 MR. NOYES: And may I approach, Your Honor?

22 THE COURT: Yes.

23 MR. NOYES: May I proceed, Your Honor?

24 THE COURT: Yes.

25 MR. NOYES: And let me just say one thing. With

1 respect to the slides that I just handed out, they do have --
2 we were overzealous. They were marked as attorney-client
3 privilege. These obviously are not attorney-client privilege.
4 We're happy to replace the slides if Your Honor would like
5 replacements.

6 THE COURT: I'm going to write all over my copy and
7 I'm the only one that's going to see it, so it's okay.

8 MR. NOYES: Thank you. And I conferred with
9 Mr. Zimmerman from Lupin as well.

10 So, Your Honor, we're here for science day to present
11 a technology tutorial about the technology related to these
12 patents. And again, my name is Chris Noyes, and together with
13 my colleagues we'll be presenting today. I'm going to start,
14 Your Honor, talking about some of the background of the
15 technology, and then Ms. Pirozzolo is going to finish the
16 presentation talking about specifics related to the technology
17 and the asserted patents.

18 THE COURT: Okay.

19 MR. NOYES: Now, Your Honor, this is a Hatch-Waxman
20 case and it's about Braintree's bowel prep called SUTAB and the
21 Orange Book patents that cover the product. And SUTAB is an
22 osmotic laxative. It's a specific type of laxative. It's FDA
23 approved for cleansing of the colon in preparation of
24 colonoscopy.

25 And bowel preps, like SUTAB shown here, are necessary

1 for an effective colonoscopy, and that's important because
2 colonoscopy is essential for the detection and prevention of
3 colon cancer.

4 And just briefly, Your Honor, I'm going to walk
5 through colon cancer at a high level screening and detection
6 and osmotic bowel preps, and then Ms. Pirozzolo will talk about
7 technology of the asserted patents.

8 Now, Your Honor, in the United States, colon cancer is
9 the second most common cause of cancer death to this day. Over
10 50,000 deaths caused by colon cancer in 2023. And it's one of
11 the leading causes of cancer death for people under 50 years
12 old. It's the leading cause for men under 50 and the second
13 leading cause for women under 50 years old.

14 The American Cancer Society estimated in 2023 that
15 over 150,000 people would be diagnosed with colon cancer, and
16 it estimated that it would kill over 50,000 people, including
17 thousands of people actually younger than 50 years old.

18 And Your Honor, as colon cancer prevalence has
19 increased, the recommendations for when people are screened
20 with colonoscopy has decreased, so now the recommendation is
21 that anyone age 45 and older get screened for colonoscopy. It
22 used to be 50 and older.

23 The American Cancer Society has also identified
24 increasing access to high-quality screening as the number one
25 way to achieve progress against colon cancer.

1 Now, just a very brief background of gastrointestinal
2 anatomy before we get into the technical details. And this is
3 how the GI tract works. You see the stomach, of course digests
4 food; it turns it into this liquid slurry; and then that liquid
5 slurry moves from the stomach into the small intestine, which
6 is in the middle there, sort of the flat smaller tube. In the
7 small intestine, the body absorbs vitamins, minerals, and other
8 nutrients. And as the nutrients are absorbed, whatever is left
9 over, the waste product, moves into the colon, which is the
10 larger bumpy organ shown here.

11 The colon is about six feet long. And that's the
12 organ in this case, the colon, that we're primarily concerned
13 with. Once the liquid slurry gets into the colon, the body
14 absorbs whatever water is left to make hard stool, and then the
15 stool obviously gets -- moves into the rectum for expulsion.

16 Now, colon cancer screening. Colon cancer starts with
17 a polyp generally on the inner lining of the colon. And they
18 start off as a result of what's called hyperproliferation of
19 cells, and they look like these small, mushroom-shaped polyps
20 on the inner lining of the colon. And it's not just polyps,
21 actually. Sometimes it could be very flat, almost lesion-like
22 growths that can result in colon cancer.

23 So removing these polyps at an early stage when
24 they're benign can prevent the development of cancer. And the
25 five-year survival rate is about 75 to 90 percent if these

1 polyps are identified in their benign stage. But if a polyp is
2 not removed and continues to grow, you can see here, it becomes
3 malignant and turns into colon cancer, and that develops --
4 that causes fatalities.

5 As these polyps continue to develop, they become
6 malignant, and the survival rate drops to 40 percent. And then
7 when you get to the Stage 4, the latest stage, only five
8 percent survival rate. So again, early detection, finding the
9 polyps is the most important thing to preventing colon cancer.

10 And screening is the major way to reduce colon cancer
11 deaths. But it's really underused. It's actually still
12 underused today. Researchers from the University of
13 Pennsylvania and Memorial Sloan-Kettering determined that
14 63 percent of colon cancer related deaths in 2010 were caused
15 by non-screenings, people just didn't get screened, and that's
16 why they were dying. And that means that screening could have
17 saved the lives of over 32,000 people in 2010 alone.

18 Now, increasing screening has been the goal for
19 researchers in this space because increasing screening for
20 people 45 and older, especially those with risk factors, has
21 tremendous potential health benefits.

22 Now, colonoscopy, Your Honor. This is just a picture
23 of the colon and how colonoscopy works. It's the gold standard
24 still to this day for detection. You may have seen ads for
25 Cologuard and things like that on TV, which is a DNA test. But

1 at the end of the day, even if you do take one of these DNA
2 tests, you have to get a colonoscopy if you come up -- if it's
3 a suggestion that you have colon cancer.

4 And this is a -- the colonoscope is inserted into the
5 colon and it has a camera at the end, and it has this little
6 snare at the end as well so it allows the doctor to identify
7 polyps or other cancerous lesions and then to remove them with
8 this snare.

9 And colonoscopies at bottom require a clean colon to
10 work. If the colon is not sufficiently clean, waste and other
11 debris can obscure the doctor's ability to see, find, and
12 detect polyps.

13 And you could compare this to driving down a road, for
14 example, with fog. You might not see potholes, you can't see
15 the view, you can't see the road signs and that could be
16 dangerous. And colonoscopy is -- not being able to see could
17 be extremely dangerous because the doctor can't find polyps.
18 They could be in that long six-foot organ, they could be hiding
19 in the various cracks and crevices. And if they're not
20 identified, a couple years go by after your screening, and they
21 can obviously turn into malignant cancers.

22 The other thing about insufficient cleansing is that
23 the patients will come for their colonoscopy, they're both in
24 this prep process, which we'll talk about, which is, as you'll
25 see, a very unpleasant process. And one of the big major

1 barriers of colonoscopy, they have to be rescheduled. And a
2 lot of times people are out of work, they don't come back for
3 screening. They don't get the second screening if they're
4 rescheduled, and so they go years without being screened for
5 colon cancer. And that obviously can cause polyps to develop
6 into malignant cancers.

7 Now, in many cases it's stool in the colon that isn't
8 flushed out from the prep that causes inadequate visualization,
9 but some of these bowel preps also can be too cloudy, they can
10 be too shiny, and that also can impede visualization.

11 So it's not just how well the bowel prep works, it's
12 all how it's made, what are the components that are important
13 for adequately -- for adequate prep and clear colons.

14 Now, unfortunately, even with all the advancements and
15 colon preps which we'll talk about, as of 2020, doctors were
16 still seeing about 15 to 35 percent of inadequately prepared
17 colons during colonoscopy procedures. So the bottom line is,
18 you need an adequate prep for a colonoscopy; you need to be
19 able to see in the colon and to identify and remove polyps.
20 And without that, we're not going to be making much progress
21 against colon cancer.

22 But historically, Your Honor, the prep has been a
23 major barrier to colonoscopy --

24 THE COURT: I want to know who are the 45 percent of
25 the people who think it's not the worst part.

1 (Laughter.)

2 THE COURT: Because I was able to evade during COVID
3 for several years until last year, so I'm very curious as to
4 who the other 45 percent are.

5 MR. NOYES: Right. I ask that question myself.

6 THE COURT: Some of you are not 50 yet, I can see, but
7 some of us are, so I'll just leave it at that.

8 MR. NOYES: Yes. It is interesting, who are the
9 45 percent who say that's not the worst part?

10 But yes, a vast majority of the people believe, and
11 the studies have shown this, that it is the worst part of
12 colonoscopy and it's the biggest deterrent to getting a
13 colonoscopy. People just don't want to take the prep, and for
14 two reasons, which we'll talk about.

15 Many of them are in this big, large volume. These are
16 the original preps from the early '80s. They're still
17 available today. They're called 4-liter preps. People just
18 can't drink that much liquid or it's made up of sort of a salty
19 liquid, there's electrolytes in them, they just can't consume
20 that. And of course, the effects of this obviously are
21 unpleasant for people as well.

22 So we have this double whammy where you can't drink
23 the prep, take the prep, and you don't like to experience the
24 prep, causes you to do, and so people just are not complying
25 with the prep and that results in an inadequate preparation for

1 colonoscopy.

2 Now, over the years, Your Honor, there have been many
3 FDA-approved products for bowel preps, and here's a timeline
4 through 2020. And there's actually some FDA-approved ones
5 after 2020. But Braintree has been an innovator in bowel prep
6 since the early 1980s, and Braintree was a small company that
7 was founded in Braintree, Massachusetts, thus the name,
8 Braintree Labs. And in 1984, they received FDA approval for
9 GoLYTELY, which was essentially this 4-liter volume prep.

10 And we have a key here on the slide for Your Honor.
11 These original 4-liter preps were made up of something called
12 polyethylene glycol or PEG, and that polyethylene glycol was
13 used to flush the colon, and we'll get into how that worked in
14 a moment.

15 But those are the 4-liter preps that forced patients
16 to drink all of this liquid to have an adequate prep. And you
17 can see over the years Braintree has continued to develop new
18 preps. There was the NuLYTELY prep in the early 1990s, that
19 was also a 4-liter PEG-based solution that had some flavoring.
20 They added a lemon packet to make it more palatable, but still
21 not palatable enough.

22 And then in the early 2000s, they came up with
23 HalfLytely, which was actually a 2-liter, so half of this, half
24 a gallon, and continued to innovate. We'll talk about these
25 different preps.

1 Starting in 2010, Braintree introduced SUPREP to the
2 market, which is a small volume, 16 ounces, a different type of
3 prep. You see here it has sulfate salts. And then in 2020 is
4 when the FDA approved SUTAB, which is the product at issue in
5 our case, which is sulfate salt based prep but in a tablet
6 form.

7 And below the Braintree products are products that
8 were developed and introduced by other companies, which we'll
9 talk about, PHOSPHO-SODA, VISICOL, and OsmoPrep. And as you
10 can see, those were all phosphate salt products. And that
11 phosphate salt allowed these products to be very small volume
12 prep, so not the large volume, but they ended up being
13 effective, but extremely dangerous, and I'll talk about that in
14 a moment.

15 And then finally, there's a product on the market now
16 that's competing with SUTAB, an FDA product called CLENPIQ.
17 And that, as you see here, is a picosulfate liquid. Now,
18 picosulfate, that's not really relevant for purposes of today,
19 but that's a different chemical. That's called a stimulant
20 laxative, and it actually is not related to the sulfate salts
21 that are in SUTAB. It's just a different chemical composition.

22 Now, one of the things that's very important in preps
23 and bowel preps is the concept of electrolytes in the body, and
24 this is just a very simple example. Electrolytes are
25 essentially salts dissolved in water. So the table salt

1 example, sodium, chloride, and ACL. You put in water and it
2 breaks up into two different ions, one sodium and one chloride.
3 And we have all these electrolytes in our body. Our body is --
4 60 percent of our body is made up of water and we have these
5 dissolved electrolytes in our body.

6 And those are all important, very important to
7 different body functions. And we have a slide on that. We are
8 going to talk about that in a moment.

9 But they are essential to different important body
10 functions and there's a range that they need to be in for a
11 healthy person to be operating -- to be healthy. And things
12 like exercise, diet, medications like bowel preps can alter the
13 balance of electrolytes in the body.

14 Now, another concept that you'll hear about, Your
15 Honor, that relates to how these bowel preps work is this
16 concept of tonicity, and that is a measure of osmotic pressure
17 in a solution. And then osmotic pressure basically is you have
18 two different solutions with different salt concentrations.

19 So for example here, you have sea water, high salt
20 concentration; and then you have distilled water, lower salt
21 concentration. The sea water is called hypertonic and then the
22 distilled water is called hypotonic. And what happens here is
23 you have a membrane like a filter or a cell wall, for example,
24 semipermeable membrane. So certain things can pass the
25 membrane but not everything. There's something called osmotic

1 pressure, which is trying to achieve equilibrium between these
2 two concentrations. So essentially you want the same amount of
3 salt in both, the salt water and the distilled water.

4 And so the sea water here will pull water from the
5 distilled water into the sea water in this example, causing the
6 sea water to be more dilute, less concentrated. And that's
7 just the scientific phenomenon. And that's that concept of
8 osmotic pressure that has been used in bowel preps like SUTAB
9 in our case, and previous preps, and we'll talk about more of
10 those in a moment.

11 But how they do this is they use these poorly
12 absorbable salts called osmotic agents, like sulfate salts or
13 phosphate salts. And when those get in the colon -- and here's
14 an example. When they're in the colon, what they do is they
15 pull water from the body into the colon. And so that's what's
16 actually flushing the colon. The water is pulled from the body
17 into the colon, that water softens the stool and causes the
18 purgation, the diarrhea that's necessary for colon cleansing.

19 On the left-hand side you'll see what these
20 larger-volume products called isotonic solutions. So they
21 don't use the water in the body. That's why you have to drink
22 so much of it. Right? You just are flushing the colon with
23 the liquid in the prep.

24 So you'll hear about hypertonic solutions, you'll hear
25 about isotonic solutions, and you'll hear about osmotic agents

1 and osmotic pressure in this case because that's the mechanism
2 of action that's making these products work.

3 And just very briefly, Your Honor, there's an impact
4 on cells on the body when you're using hypertonic solution.
5 The water has to come from somewhere. So what it does is it
6 actually takes the water out of the body and the cells can be
7 dehydrated. So not only are you getting dehydrated cells,
8 you're pulling electrolytes out of the body and those also get
9 flushed out.

10 And so when researchers are trying to develop these
11 colon preps, they're trying to make them work really well,
12 they're trying to get patients to comply to take them, but
13 they're also trying to avoid electrolyte imbalance and fluid
14 shifts, dehydration. So those are all the considerations that
15 the researchers are working with when they're trying to make
16 bowel preps.

17 So now, the bowel preps, we talked a little bit about
18 this already. We have the GoLYTELY and the NuLYTELY, which are
19 these 4-liter preps; these are the isotonic ones, you're just
20 flushing the colon; and then there was the further development
21 of the 2-liter prep. These worked essentially this way, Your
22 Honor, and this is a very simplified diagram. But you have
23 colon, stool in the colon before ingestion, and then you have
24 your body water. You drink all of this liquid prep, and then
25 -- the prep not only has the PEG in it, which can't be

1 absorbed, but it also has some electrolytes in it. And what
2 happens is it flushes the colon and the multiple instances of
3 diarrhea, so by the end the goal is to have a clear liquid and
4 all the stool is out of the body.

5 The body water, though, remains the same because you
6 haven't pulled any water from the body, or very little water
7 from the body into the colon and the electrolytes' balance stay
8 the same because these products had electrolytes, that's why
9 they're salty, to replace what was being flushed out.

10 Now, these are very safe products. They're still
11 available. People still use them. Doctors still prescribe
12 them. But again, the patient compliance is a huge issue with
13 these. And a lot of times people will drink half the dose,
14 three-quarters of the dose, have one, you know, instance of
15 diarrhea and say I'm done, I'm just not doing it. And then
16 they go to the doctor, and the doctor either says -- you know,
17 they might miss a polyp or they reschedule them for another
18 colonoscopy.

19 So because of this, there are other researchers trying
20 to solve the problem. They said, how do we come up with a
21 small-volume prep? And here's two examples that became very
22 popular after the large-volume preps were on the market.

23 One was called Fleet PHOSPHO-SODA and the others were
24 called VISICOL and OsmoPrep. These both were smaller-volume
25 preps. You can see the Fleet was essentially 45 milliliters

1 total that you took, so a lot smaller. These preps all used
2 phosphate salts. And they were very effective and patient
3 compliance was very good because the volume was so low.

4 The problem with these preps -- and let me just
5 briefly describe how these worked. And again, talked about
6 this already, but these preps work by the osmotic agent
7 phosphate, creating that osmotic pressure, pulling water into
8 the colon and then it will soften the stool and things will get
9 flushed out. Body water will get flushed out and electrolytes
10 will get flushed out as well.

11 And here's an example of how these would work. You
12 see here you have electrolytes in your body, in your intestine,
13 in your colon, and you have your body water. You ingest Fleet,
14 for example, that would result in effective cleansing, but what
15 would happen is you lose body water, you lose almost a gallon
16 of water from your body when you took Fleet.

17 And another problem with this particular formulation
18 was it didn't have electrolytes in it to replace the
19 electrolytes that were being lost from the body. And in fact,
20 with PHOSPHO-SODA, the majority of potassium in the body was
21 lost when patients were taking this. And as I mentioned
22 before, that's a really important thing because electrolyte
23 imbalances can cause medical conditions.

24 And just pausing on potassium here, for example, it's
25 essential for blood pressure, heart function, muscle function.

1 And if you lose it, it's called hypokalemia, loss of potassium.
2 You could have kidney damage, muscle weakness, dizziness, loss
3 of consciousness, et cetera, arrhythmias. And there's some
4 other examples here, Your Honor, about how electrolytes are
5 required for important body function and how loss or too much
6 of those things can impact the health of people.

7 Now, the thing about Fleet was not only was it causing
8 loss of water, loss of electrolytes, it was actually killing
9 people. And it was recalled -- the FDA issued a warning in
10 2008. You can see here the product was actually recalled
11 because of serious side effects including destruction of the
12 kidneys. Essentially it would deposit calcium and phosphate in
13 the kidneys and it was called nephrocalcinosis, it calcified
14 people's kidneys. And so Fleet was taken off the market.

15 And then there was a black box warning in the label
16 for VISICOL and OsmoPrep, you can see it here. These cases
17 resulted in permanent impairment of renal function and some
18 patients required long-term dialysis. So it turned out these
19 products were very unsafe at the end of the day and they were
20 taken off the market. They have all been discontinued at this
21 point.

22 Now, in -- so that was 2008 when the FDA said we have
23 a problem with these small-volume preps. And in 2010, the FDA
24 approved another -- a different type of small-volume prep and
25 this was -- you can see the difference here, Your Honor. This

1 was SUPREP and here's what the bottle was. So you take two of
2 these, 16 ounces of these plus additional water. And this
3 didn't have phosphates. This had sodium sulfate, potassium
4 sulfate and magnesium sulfate, and those were the osmotic
5 agents like sodium phosphate but they didn't result in the
6 electrolyte problems, in the kidney damage problems of the
7 Fleet.

8 So -- and just briefly, Your Honor, this is how SUPREP
9 worked and still works today. You see here the -- again,
10 there's electrolytes and there's stool in the colon and you
11 have your body water. The prep itself has a balance of sulfate
12 salts that replace electrolytes that were lost. It's a smaller
13 volume. It does bring body water into the -- it does use the
14 body's water to flush the colon, but as part of the dosing
15 regimen you're drinking additional water to avoid dehydration.
16 And then the prep itself is balancing the electrolytes.

17 So that was a very safe prep, a smaller-volume prep.
18 Still, though, there were compliance issues because you can
19 imagine highly concentrated sulfate salts are not palatable for
20 many people. They try to mask these with -- I forget which
21 flavor this was. This was lemon lime or orange or something
22 like that. But many people found them to be unpalatable and
23 you're still having compliance issues, even with SUPREP, which
24 was one of the most successful preps around.

25 So we're still left with a situation where you need an

1 effective prep that gives you sufficient cleansing for adequate
2 visualization of the colon, one that's safe, no electrolyte
3 disturbances that are dangerous, no dangerous fluid shifts, no
4 kidney damage but doesn't require patients to ingest all of
5 this liquid, all of this amount of -- or unpleasant tasting
6 liquids.

7 And that's where we end up for this case, Your Honor,
8 the SUTAB, which are -- if you look here, it's a split-dose
9 regimen. So you take 12 pills the night before the colonoscopy
10 and then you take 12 pills the morning of. And the only thing
11 you're required to drink is water. And so this has potassium
12 chloride, sodium sulfate, and magnesium sulfate in it. Again,
13 that induces the purgation by using an osmotic agent, brings
14 the body water into the colon, but it's an imbalanced solution
15 that replaces electrolytes and when you're drinking the water,
16 you're not getting dehydration.

17 So that's the background and probably a very too quick
18 history of colon preps, but now I'm going to turn it to
19 Ms. Pirozzolo and she's going to talk more about the patents
20 and how this technology relates to the patents.

21 THE COURT: Thank you.

22 MS. PIROZZOLO: Thank you, Your Honor. Lisa Pirozzolo
23 for the plaintiffs.

24 I would like to briefly discuss the asserted patents
25 in this case. They all claim priority to a 2017 patent

1 application and they're all directed to solid oral sulfate salt
2 formulations for cleansing the colon.

3 As the abstract of the patents explains, the patents
4 disclose these solid oral dosage formulations that comprise
5 sodium sulfate, magnesium sulfate, and potassium chloride for
6 colon cleansing. Two of the patents, the '656 and the '697
7 Patents claim formulations for colon cleansing; and the other
8 two patents, the '498 and the '864 Patents claim methods of
9 colon cleansing.

10 Before we go through the claims, I was going to walk
11 through some of the important parts of the specifications. And
12 the specifications you'll see have the background at Columns 1
13 and 2, a summary of the invention at Columns 2 to 5, a detailed
14 description of the invention and then examples. So I'm going
15 to touch on aspects of the specification.

16 So in the detailed description, as discussed at Column
17 7, the claimed formulations are tablets that contain three --
18 these three salts: Sodium sulfate, magnesium sulfate, and
19 potassium chloride.

20 The combination of these salts was developed to induce
21 hypertonic colon cleansing, as Mr. Noyes described a few
22 minutes ago. The formulation was also designed to work without
23 causing the clinically significant electrolyte shifts that
24 Mr. Noyes discussed and the other adverse effects that some of
25 the phosphate-based formulations had experienced.

1 And so these concepts: The combination of salts, the
2 avoiding electrolyte shifts, clinically significant electrolyte
3 shifts, and other side effects as discussed in the
4 specification.

5 So if -- as to the specific combination of salts, I've
6 put up a section of Column 2 of the patent, and this section of
7 the patent describes the specific combination of salts. And
8 you can see the sodium sulfate in the blue box, magnesium
9 sulfate in the purple box, and potassium chloride in the green
10 box. And the specification describes the specific amounts of
11 these salts that have to be in the formulation for it to have
12 the right effects.

13 So it's about 30 to about 40 grams of sodium sulfate,
14 about 4 to 8 grams of magnesium sulfate, and about 3 to 5 grams
15 of potassium chloride. And then the spec described narrows
16 that down to more specific formulations with more specific
17 quantities of the three salts.

18 This specific combination of salts, as explained in
19 Column 5 of the patent, had two particular benefits. First,
20 the inventors discovered that only two sulfate salts, the
21 sodium and magnesium sulfate, were required for colon
22 cleansing.

23 Second, the inventors discovered that including
24 potassium chloride along with the magnesium and sulfate salts
25 could avoid this problem of clinically significant electrolyte

1 shifts. So when you combined the magnesium sulfate, the sodium
2 sulfate, and the potassium chloride in the amounts specified in
3 the specification, that would induce diarrhea, the purgation
4 you want for your colonoscopy, but it would reduce the
5 clinically significant gains or losses of electrolytes that
6 could be harmful to patients.

7 And so this specific combination was important. And I
8 think Mr. Noyes has already covered this, but in terms of colon
9 cleansing, the specification explains at Column 5 how this
10 works, that the sulfate salts are poorly absorbed and so they
11 remain in the colon and they create this osmotic pressure that,
12 if you call the sea water and the fresh water, it causes the
13 water to enter the colon and induce purgation. So that's how
14 the formulation effectively cleanses the colon.

15 But in addition to effectively cleansing the colon,
16 this combination addresses the two shortcomings in the prior
17 art that Mr. Noyes discussed. So the medical dangers caused by
18 the clinically significant electrolyte shifts and also the
19 renal failure that had been caused by the phosphate-based
20 formulations.

21 So in terms of the clinically significant electrolyte
22 shifts, you know, we've talked about it, but by including this
23 specific balance, you keep kind of the electrolytes in the body
24 properly aligned.

25 And secondly, the inventors discovered you didn't need

1 to include phosphates such as been included in those other
2 colon preps that Mr. Noyes discussed, the one with the black
3 box labels. You could have effective colon cleansing without
4 using phosphates.

5 So that is kind of how these formulations work and why
6 the combination of active ingredients is so important.

7 I wanted to shift to another important aspect of the
8 invention, which is the fact that these are in tablet form.
9 And the specification explains at Column 5 that the tablet
10 formulations include both active ingredients and inactive
11 ingredients. The sodium sulfate, magnesium sulfate, and
12 potassium chloride we've been discussing are the active
13 ingredients in the formulation, and they're called active
14 ingredients because those are the ingredients that induce the
15 purgation of the colon and create the osmotic effect and
16 balance the electrolytes.

17 But the tablet formulations also include inactive
18 ingredients known as excipients that are necessary to actually
19 put these active ingredients into tablets that could be used.
20 And so it's these excipients that enable the tablet
21 formulation.

22 So in the Examples section of the patent you'll -- the
23 inventors describe specific formulations that they made. So
24 for example, Table 1 of the specification shows three specific
25 formulations that the inventors made. And you can see in

1 Table 1, in these examples, specific amounts of active
2 ingredients and inactive ingredients.

3 The three active ingredients that we've discussed are
4 discussed at the top in blue, purple and green, but then there
5 are two inactive ingredients or excipients that were in these
6 formulations that are in red and orange below. And I'll talk
7 about those a little bit.

8 So excipients can do different things in a tablet. We
9 have a picture of a tablet here. Tablets have an inside, a
10 coating. And these excipients do different things to make the
11 tablet work.

12 For example, the patent talks about the use of
13 lubricants in making tablets. Lubricants are excipients that
14 facilitate the tableting process and make it easier for the
15 tablet to be ejected from the tablet machinery. And as the
16 asserted patents discuss in Column 7, which we have here,
17 sodium caprylate is one example of a lubricant that can be used
18 in the tablets. And that is, in the Table 1, one of the
19 inactive ingredients was NaCaprylate, and that is the excipient
20 being referred to there.

21 The patents also talk about binders. And binders are
22 the glue that holds the different tablet components together.
23 The asserted patents explain that the binder could be
24 Polyethylene Glycol 8000 or PEG 8000, and that is the other
25 excipient that was referred to in Table 1 of the patent that we

1 looked at.

2 In this context, PEG is being used differently than it
3 was being used in some of the other colon cleansing
4 preparations that Mr. Noyes talked about. In those it was used
5 in large amounts to induce purgation; here it's being used in a
6 small amount as an excipient and not as an active ingredient.

7 So another aspect of excipients that was important to
8 the invention was that the properties of these excipients
9 matter when you're putting together an effective colon
10 cleansing prep.

11 Mr. Noyes talked about the importance of being able to
12 visualize the colon during the colonoscopy procedure. Because
13 the colon contains a lot of water, it's important for
14 visualization, for these tablets to dissolve effectively in the
15 colon. So you don't want the tablets to leave -- to have
16 particles or leave an oily residue in the colon because that
17 could impede the efficacy of the colonoscopy.

18 So the inventors explained in the specification that
19 the claimed formulations use a minimal amount of water-soluble
20 excipients and that's so that they'll dissolve clearly and not
21 leave an insoluble residue in the colon when you take the
22 preparation.

23 So just a little more on dissolution. The patents
24 discuss the quick dissolution of the tablets, including the
25 excipients in the water of the colon in order to facilitate the

1 visualization. And the dissolution characteristics can be
2 evaluated using an apparatus where you put a tablet in a given
3 amount of solution and you have a paddle, swirl it around. And
4 this can then be measured and it's called dissolution testing.
5 And the patent describes that at Column 9.

6 The patents also talk about the concept of turbidity
7 in Column 9, in the same portion where dissolution is discussed
8 that I just referred to.

9 THE COURT: Can you say that again? I am sorry. Also
10 refers to what?

11 MS. PIROZZOLO: Turbidity.

12 So turbidity refers to the cloudiness or haziness of a
13 fluid. And turbidity can occur for several reasons, including
14 the compound leaving an oily residue. So turbidity can also be
15 measured in a formulation using a device that measures how much
16 light is scattered as the solution -- as it passes through the
17 solution. And this is described in the patent at Column 9.

18 And the units used are Nephelometric Turbidity Units
19 or NTUs. The higher the NTU value, the more light scattering
20 has occurred and the more turbid or cloudy the solution is.

21 So another key aspect of the invention is the ability
22 to use large amounts of active ingredient as compared to these
23 inactive excipients we're talking about. So on the screen are
24 these tablets and the actives are in green and the excipients
25 are in blue.

1 And the goal of the patent -- the patents discuss
2 reducing the excipients to as little as 10 percent or even as
3 little as 5 percent of the total weight of the tablet, and
4 having the active ingredients be in the neighborhood of at
5 least 60 to as high as 80 -- I am sorry, the sodium sulfate
6 active ingredients to be as high as 80 percent of the tablet.

7 And the significance of this ratio of excipients to
8 active ingredients is important because it allows the tablets
9 themselves to be smaller and the number of tablets the patients
10 take to be smaller. And the idea is you're coming up with a
11 way to maximize the amount of active ingredient going into the
12 patient and minimize the amount of inactive ingredient to try
13 to make the tablets more compact and fewer and reduce the
14 burden on patients.

15 So the claimed tablet formulations are in order to be
16 more convenient for the patients and the patent talks about
17 this. In addition to having these tablets that are manageable
18 size and quantity, you can drink water with the tablets so you
19 don't have to drink the salty tasting, kind of bad smelling
20 preparations that people really dislike.

21 The claimed -- this fact describes how you can take a
22 total of 24 tablets in a split dose of 12 so that it's making
23 it manageable with these two administrations for patients to
24 get the entire dose taken with water. And by reducing the
25 barriers to compliance, the goal is to get more effective

1 colonoscopy prep for patients.

2 So those are some of the highlights of the spec, and I
3 was going to briefly just go through the claims of the patents
4 that are being asserted here.

5 The '656 Patent is one of the formulation patents I
6 mentioned. The asserted claims are 1, 3, 8, 9, 11, 17, 18, and
7 20. And the claims are directed to these formulations with the
8 three salts I mentioned. So the claims have sodium sulfate in
9 blue, magnesium sulfate in purple, and potassium chloride in
10 green.

11 And they have ranges for the amounts of those
12 ingredients in the claims. The claims also, if you look at
13 Claim 3, recite that that formulation of those salts is
14 compressed into tablet form. Claim 8 -- in a tablet of 24
15 tablets, that's Claim 3. And then Claim 8 specifies that those
16 tablets can be divided into two doses with each dose being 12
17 tablets, that's in Claim 9.

18 And Claim 17 and 18 talk about the dissolution
19 characteristics of the formulation, and Claim 20 talks about
20 the turbidity of the formulation as measured in the NTUs. So
21 that's the claims that are being asserted in that '656 Patent.

22 The '697 Patent is the other composition patent, and
23 the main difference between the claims that are being asserted
24 there and the claims of the '656 Patent are that if you look at
25 Claim 1, there are more specific amounts of the three active

1 ingredients. So 35.5 grams of sodium sulfate, 5.4 grams of
2 magnesium sulfate, and about 4.5 grams of potassium
3 chloride.

4 And this patent also recites the sodium caprylate
5 excipient, this patent in Claim 4. And in Claim 5 it specifies
6 the PEG excipient is PEG 8000, which is a specific type of
7 PEG.

8 The '498 Patent is one of the method of administration
9 patents. This patent basically claims administration of the
10 formulation and specifies administering the active ingredients
11 with water. And claim -- the '864 Patent further describes the
12 dosing regimen and specifically mentions the PEG excipient
13 component.

14 So those -- that's a high-level review of the
15 specification and the claims.

16 And just to wrap up, these four patents are listed in
17 the FDA's Orange Book for SUTAB, so they cover the SUTAB
18 product that Mr. Noyes mentioned, and SUTAB was approved on
19 November 10th, 2020.

20 So if Your Honor doesn't have any questions -- or do
21 you have questions?

22 THE COURT: Not yet. I am a lawyer, right? I am not
23 a scientist. I say I went to law school because I can't do
24 science or math. But when we have these days, I learn more
25 than I think I ever learned or thought I would learn as a

1 lawyer.

2 But no, very helpful. Thank you very much.

3 How long do you think -- is that the total of your
4 presentation, I'm assuming, because you're at the end of your
5 slides?

6 MS. PIROZZOLO: Yes.

7 THE COURT: How long do you think you'll be? An hour?

8 MR. ZIMMERMAN: I believe I'm 45 minutes, Your Honor.

9 THE COURT: So what I'm going to do -- because I was
10 supposed to do the criminal matter at 1:30. And if that's the
11 case, I will just make them wait 15 to 20 minutes rather than
12 breaking and make you wait.

13 MR. ZIMMERMAN: I'm happy to begin.

14 THE COURT: So if that's the case, then I think that
15 makes the most sense.

16 MR. ZIMMERMAN: Your Honor, we also have some slides.
17 May I approach?

18 THE COURT: Yes.

19 MR. ZIMMERMAN: May I proceed, Your Honor?

20 THE COURT: Yes.

21 MR. ZIMMERMAN: Bill Zimmerman of Knobbe Martens on
22 behalf of the Lupin Defendants.

23 I think the good news is that the parties seem to
24 agree on a lot of the relevant background and the key issues
25 for today.

1 If we could go to the next slide.

2 This case relates to Lupin's filing of an Abbreviated
3 New Drug Application which seeks to market a generic version of
4 plaintiffs' SUTAB product. SUTAB is an osmotic laxative for
5 cleansing the colon before a colonoscopy. And as you heard, it
6 has three key active ingredients that we'll be discussing, all
7 of which are salts: Sodium sulfate, magnesium sulfate, and
8 potassium chloride.

9 There are four asserted patents. They're all from the
10 same family, they all have the same specification. The only
11 difference is in the claims.

12 If we could go to the next slide.

13 As you heard from Mr. Noyes, the colonoscopy is a very
14 common procedure that's used to screen for GI diseases and
15 colon polyps, which can lead to cancer. The procedure involves
16 imaging the colon with a small camera. And because of the
17 nature of the procedure, it's important that the colon be
18 cleansed of fecal matter prior to the colonoscopy and you need
19 to be able to clearly visualize the lining of the colon.
20 That's the key part to be able to detect the disease and the
21 polyps.

22 And the figure on the slide is illustrative of what
23 the difference is between kind of pre-cleansing and
24 post-cleansing. And you can see from the picture on the right,
25 you have far more visualization after you have a properly

1 cleansed colon.

2 If we could go to the next slide.

3 So osmotic laxatives are a very common type of
4 colonoscopy preparation, and SUTAB is an example of an osmotic
5 laxative.

6 And these osmotic laxatives work in one of two ways:
7 By either retaining water in the colon or drawing water into
8 the colon. And they're typically comprised of poorly absorbed
9 salts or inert compounds, and this leads to a high
10 concentration of salt or compounds in the colon and then draws
11 the water in.

12 The high concentration creates an osmotic pressure
13 within the colon, and the body tries to balance that out by
14 bringing more water into the colon, as shown in the figure.
15 The increased water content then softens the stool and causes
16 peristalsis, which is the contraction of the intestinal muscles
17 which leads to purgation or emptying of the colon.

18 I'd like to talk a little bit about what the
19 colonoscopy prep landscape looks like prior to the introduction
20 of SUTAB.

21 If we could go to Slide 5.

22 There were a number of commercially-available options
23 for colonoscopy preps prior to the introduction of SUTAB. As
24 reflected in the table, each of these preps had some benefits
25 as well as some significant drawbacks. The polyethylene glycol

1 preps or the PEG preps were and still are very commonly used.
2 They're very effective and don't pose any major safety issue,
3 however, they have two drawbacks. They require patients to
4 ingest a large volume of liquid, and that liquid generally had
5 a bad taste or a poor taste and that led to patient compliance
6 issues.

7 The second type that was available are the phosphate
8 solutions, predominantly sodium phosphate, and those aren't
9 commonly used today because of serious safety concerns.

10 Now, these sodium phosphate products were available as
11 tablets instead of the dissolved powder so they were more
12 tolerated by patients; however, they could cause serious side
13 effects which led to the FDA requiring a black box warning
14 which we saw earlier and I'll discuss more a little later.

15 You then had the oral sulfate solutions, and this was
16 the newest category. These were safe and effective, but they
17 still suffered from some of the taste and volume issues of the
18 PEG preps. And the one that I think you'll hear most about
19 during this case is the SUPREP product, and we will talk about
20 that in a little more detail.

21 And then fourth, you had kind of over-the-counter
22 treatments. These were like Miralax and Gatorade. They
23 weren't FDA approved, but they were still commonly used. They
24 had a better taste than the other liquids, so they were better
25 tolerated by patients, but they weren't as effective as the

1 FDA-approved preparations.

2 If we could go to the next slide.

3 As you saw in plaintiffs' presentation, there are four
4 patents at issue. They're from the same family and have the
5 same specification and they generally break down into two
6 groups. You have the '656 and the '697 Patents, which are the
7 composition patents; and the '864 and the '498 Patents, which
8 are methods of treatment, method of administering the
9 composition to cleanse the colon. And the priority date for
10 all of the relevant patents is August of 2017.

11 If we could go to the next slide.

12 Just to give you a general overview of the asserted
13 claims you're going to see. Composition claims, similar to
14 Claim 1 of the '697 Patent; and then you'll see method of
15 administration claims, method of cleansing the colon claims,
16 similar to Claim 1 of the '498 Patent.

17 The commonality for all of the asserted claims is the
18 recitation of three salts: Sodium sulfate, magnesium sulfate,
19 and potassium chloride.

20 Now, the specific amounts or ranges of those
21 ingredients will change, but those three salts are common
22 across all of the asserted claims.

23 If we could go to the next slide.

24 So here we see those three components: The sodium
25 sulfate, magnesium sulfate, and potassium chloride. When these

1 salts are dissolved in a liquid such as water, they break down
2 into their positively and negative charged components, which
3 are referred to as ions, and the positive and negative ions of
4 each salt are illustrated in the structure column.

5 You'll see that the sodium sulfate and magnesium
6 sulfate share the same negatively charged sulfate ion but they
7 have different salt counter ions, the sodium and the magnesium.

8 THE COURT: Can you explain that because I don't
9 understand what you're saying.

10 MR. ZIMMERMAN: Yes.

11 THE COURT: You should know -- if I don't understand,
12 I'm just going to stop you and say I don't understand because
13 it doesn't make sense to wait until you're done.

14 So can you just explain that to me again?

15 MR. ZIMMERMAN: Yes. So what you see is all of these
16 salts have a positively charged piece and a negatively charged
17 piece, and when you put this together as a solid, the charge
18 cancels out and is zero. When you put them in water, they
19 disassociate into pieces with a positive charge and pieces with
20 a negative charge.

21 And so in the chart you see the positively charged
22 piece for the first one is the sodium and it has a plus one;
23 and then the counter ion or the second piece, which has the
24 negative charges, the sulfate; and then for the magnesium
25 sulfate you see the positively charged magnesium and then the

1 negatively charged sulfate again. So it's the same sulfate ion
2 in solution from the sodium sulfate or the magnesium sulfate.

3 So if you were to be given the solution, you couldn't
4 tell where the sulfates came from when they disassociated in
5 the water.

6 Does that make sense?

7 THE COURT: A little bit.

8 MR. ZIMMERMAN: And then for the third component it's
9 potassium chloride. And when it's dissolved in water, it
10 breaks down into a positively charged potassium, which is
11 indicated with the K, and the negatively charged chlorine atom.
12 So when you put all of these components into solution and you
13 mix them with water, what you see, it's no longer sodium
14 sulfate, magnesium sulfate, and potassium chloride; it's ions
15 of sodium, ions of magnesium, ions of sulfate, ions of
16 potassium, and ions of chloride all floating around in the
17 solution.

18 If we could go to the next slide.

19 What we're going to see on the next two slides is a
20 table from an article from 2014 that summarized the available
21 colonoscopy preparations that were available at that time. And
22 as shown in the table, there are many repeat ingredients that
23 show up in several of the preparations. It's a more
24 comprehensive view of the landscape than the selected few we've
25 seen earlier.

1 And so you'll see that there is potassium chloride
2 widely used, sodium sulfate was widely used. And if we turn to
3 the next slide, you'll see that the SUPREP kit introduced
4 magnesium sulfate to the mix.

5 If we could go to Slide 11.

6 So as discussed on the previous slide, one type of
7 commercially-available colonoscopy preparation which was
8 introduced in 2010 was the SUPREP bowel kit. And this
9 contained sodium sulfate, potassium sulfate, and magnesium
10 sulfate. This regimen was a split-dose formulation where the
11 patient would take half of the solution the night before the
12 colonoscopy and the second half of the solution the morning of.
13 And because of the way the claims are structured in the method
14 claims, the split-dosing is going to become an issue in the
15 case.

16 If we could proceed to Slide 12.

17 As discussed earlier, there were some tablet-based
18 colonoscopy preparations on the market in 2017, specifically
19 OsmoPrep and VISICOL. Both of these medications included
20 sodium phosphate as their primary active ingredient and the
21 tablets were better tolerated by patients who preferred tablets
22 over ingesting large volumes of liquid that can be distasteful
23 as well.

24 However, OsmoPrep and VISICOL had two major drawbacks
25 that were suffered by both products. First, they included an

1 ingredient called microcrystalline cellulose, and that's an
2 inactive ingredient or an excipient. And this ingredient
3 doesn't dissolve in water and it would leave behind a residue
4 in the colon which made it more difficult to visualize the
5 colon during the colonoscopy process.

6 The second drawback was that sodium phosphate in these
7 products could cause acute phosphate nephropathy, and this was
8 a serious medical condition you heard about earlier that led to
9 serious kidney disease.

10 So if we turn to the next slide, the FDA then put a
11 black box warning on both of these products due to the safety
12 concerns from sodium phosphate. And because of the safety
13 concerns, the sodium phosphate tablets were not as widely used
14 in 2017 despite their tolerability advantages compared to the
15 liquid-based preps.

16 If we could turn to Slide 14.

17 One issue that you heard briefly from with the
18 plaintiffs that will likely come up in the case relates to what
19 are called electrolyte shifts, and these can occur from the
20 preps from the colonoscopy.

21 Now, the electrolytes are salts or minerals in the
22 blood or bodily fluid that carry an electrical charge, and
23 these are often ions like the ions we discussed previously for
24 the salts that are claimed in the asserted patents.

25 And one potential concern with these types of osmotic

1 laxatives was their propensity to cause patients to experience
2 gains or losses in the electrolytes. And this is illustrated
3 in the figure here which shows how osmotic laxatives can cause
4 an influx of electrolytes from the body into the colon, leaving
5 the body electrolyte depleted.

6 And these electrolyte shifts can cause health
7 problems, particularly if they're at the large enough
8 magnitude. And one key example of this is the sodium phosphate
9 preps that we previously discussed. What they were causing was
10 too much phosphate in the blood which was leading to the kidney
11 issue.

12 And these electrolyte shifts were often addressed by
13 adding salts to the colonoscopy prep in order to balance
14 electrolytes. And you saw that most predominantly with the
15 polyethylene glycol or PEG-based solutions.

16 If we could go to the next slide.

17 So the table that we see on Slide 15 shows an overview
18 of the state of the electrolyte shifts with the various
19 products that were available in 2017. And what we see is that
20 the PEG and sulfate-based preps were not associated with any
21 kind of measurable or effect-causing electrolyte shifts. And
22 we did see those type of shifts in the sodium phosphate
23 products.

24 If we could go to the next slide.

25 Another issue that will likely arise in the case

1 relates to the dosing or administration of the colonoscopy
2 products and specifically what's often referred to as
3 split-dosing. And split-dosing involves administering the
4 colonoscopy prep in at least two separate doses separated by
5 some amount of time. And you saw this in the claims of the
6 method patents earlier.

7 Most commonly with these types of bowel preps what you
8 saw was a first dose administered the night before the
9 procedure and then a second dose the morning of, so the
10 split-dosing was fairly common for these products. And what
11 we've shown on the screen is the split-dosing regimen for both
12 SUPREP and MOVIPREP.

13 Now, the split-dosing has been found to lead to two
14 things: More effective colon cleansing because of the split
15 administration, you get two doses of the medicine which makes
16 it more effective by dividing them; and the second one was that
17 this was the predominant approach for colonoscopy cleansing by
18 2017.

19 And why is this going to be important? If we go to
20 the next slide, both of the method claims, the method patents,
21 the '489 and the '864, require this type of split-dosing. As
22 we've highlighted here, both of the methods of the claims
23 require that the compositions are administered as a first dose
24 and then a second dose that's administered later, both with
25 multiple volumes of liquid.

1 If we go to the next slide.

2 Another issue that was discussed previously and will
3 likely come up in the case is dissolution. And this relates to
4 the process in which a substance is dissolved in a liquid and
5 forms a solution. A very common example of this is dissolving
6 table salt in water.

7 And dissolution testing measures the extent and the
8 rate that a substance forms a solution. So essentially, how
9 fast does it dissolve? And the figure on the slide here, which
10 is similar to plaintiffs' figure, illustrates a common
11 apparatus that's used for dissolution testing. It's the paddle
12 apparatus. And as illustrated, the drug is placed within a
13 volume of a liquid medium as the paddle blade rotates; and then
14 the tense measures the amount of time it takes for the tablet
15 to dissolve in the liquid. And the dissolution rate can be
16 important because it can impact the bioavailability of the drug
17 and the effectiveness of the drug.

18 If we go to the next slide.

19 This highlights why dissolution will likely be an
20 issue in this case. Claims 17 and 18 of the '656 Patent
21 contain specific dissolution requirements. Now, if we look at
22 what the specifications say about dissolution, it says you can
23 use the test methods provided in the United States
24 Pharmacopoeia Volume 36, Section 711.

25 If we turn to that section, the Pharmacopoeia provides

1 general guidance on performing dissolution methods. For
2 example, it explains how to set up the apparatus that can be
3 used for the testing, such as the paddle.

4 Importantly, there are things that it doesn't tell
5 you. The Pharmacopoeia doesn't tell you the paddle rotation
6 speed, it doesn't tell you the dissolution media that's used,
7 it doesn't place any specifics on the dissolution
8 characteristics that a drug has to meet, and those aren't in
9 the specification either.

10 And so the dispute between the parties there is going
11 to be whether the disclosure in the patents is sufficient for
12 the dissolution testing required.

13 If we go to the next slide.

14 Another topic that will come up in the case is the
15 role of excipients, and we heard some about this earlier. In
16 pharmaceutical products, an excipient is an inactive substance
17 that provides the medium for delivering the drug. And the
18 excipients are commonly referred to based on their function,
19 that's how they're characterized, and the role they play in the
20 tableting process.

21 For example, on the right side of the slide we have an
22 excerpt from the patent specification which state that the
23 disclosed compositions can include one or more excipients, and
24 here they're characterized by function, binders, lubricants,
25 grinders, et cetera.

1 In this case we'll be focusing on two particular
2 functions of the excipient: One as a binder and one as a
3 lubricant. As the name suggests, binders are the substances
4 that help bind the powder mixture together to form the tablets.
5 Lubricants are substances that reduce friction and prevent
6 tablet material from sticking to the equipment as the tablets
7 are compressed together. And this is important in getting
8 uniformity for the tablets with respect to size and
9 compression, which can impact how the tablets repeatedly
10 function.

11 If we could turn to the next slide.

12 In the context of the tablets that were used for
13 colonoscopy preparations, one of the important factors that was
14 recognized in 2017 was to avoid insoluble excipients in the
15 tablets. And we saw this earlier with respect to the
16 microcrystalline cellulose in the sodium phosphate tablets. It
17 wouldn't dissolve and would leave a residue that could obscure
18 visualization of the colon. So one of the key factors at this
19 time was to use excipients that were fully soluble or mostly
20 soluble in water.

21 If we could turn to the next slide.

22 The two key excipients that will become at issue
23 during the case are the binders and lubricants, and
24 specifically the binder polyethylene glycol and the lubricant
25 sodium caprylate. And as you'll see, both of these are claimed

1 in various claims of the asserted patents and the patents
2 generally discuss them in the specification. But the
3 discussion of them is limited to their function in terms of
4 binder and lubricant.

5 If we could turn to the next slide.

6 Here we have an excerpt from the Handbook of
7 Pharmaceutical Excipients that describes polyethylene glycol.
8 As highlighted in the handbook, polyethylene glycol or PEG is a
9 water-soluble excipient which is important for avoiding those
10 residues that can obscure visualization during the colonoscopy.

11 And the handbook recognizes that high-molecular-weight
12 PEGs or polyethylene glycols were known to enhance the
13 effectiveness of tablet binders.

14 If we turn to the next slide, we address the second
15 excipient. And here we have an excerpt from the Handbook of
16 Pharmaceutical Excipients and one from the US Pharmacopeia
17 National Formulary that provide information on the second
18 excipient lubricant, sodium caprylate and sodium.

19 And sodium caprylate was discussed in the handbook as
20 being used as a stabilizer during the production of albumin
21 solutions, and it was also known that sodium caprylate could be
22 dissolved in water, again, so it wouldn't leave the residue
23 that impeded visualization during the colonoscopy.

24 And finally, Your Honor, I'd like to turn to the issue
25 of turbidity. There was some discussion of it earlier. And

1 this is how cloudy a solution is. And turbidity is measured in
2 Nephelometric Turbidity Units or NTU, as referred to in the
3 specification. And that's a measure of how hazy the solution
4 is. And as we can see on the top left side of the screen, you
5 can see different kind of grades of visualization based on the
6 NTU units.

7 And this testing is done by passing laser light
8 through the solution, as shown in the bottom left corner.

9 If we turn to the next slide, the reason turbidity
10 becomes important is because it is recited in Claim 20 of the
11 '656 Patent. There is a brief discussion of turbidity in the
12 patent, but no discussion of the parameters used of the
13 turbidity testing, no disclosures of results of turbidity
14 testing, no discussion of how to conduct the testing. And
15 again, there will be a dispute between the parties as to
16 definiteness and the amount of disclosure and was that
17 sufficient.

18 Does Your Honor have any questions?

19 THE COURT: Not right now.

20 MR. ZIMMERMAN: Thank you very much.

21 THE COURT: Okay. So counsel, we're scheduled to do a
22 hearing on October 29th. You'll have to remind me, because I'm
23 in the midst -- I think in the next month or so I have three
24 *Markman* hearings.

25 Are you just arguing or are you presenting testimony?

1 How many witnesses do you think you'll have?

2 MR. NOYES: Your Honor, we don't have any witnesses.

3 It's just argument.

4 THE COURT: So you're both just going to argue. Okay.

5 That's this case. All right.

6 MR. ZIMMERMAN: Yes, Your Honor.

7 THE COURT: So I will just tell you this -- you can
8 both be seated. You should not presume that I know or
9 understand anything. I have not had an ANDA case before. I've
10 done patent cases before, I've done patent preliminary
11 injunction cases before, but I have not done an ANDA case. So
12 to the extent you think you don't want to insult me, I'd rather
13 you insult me and start at a kindergarten level. Because as I
14 said before, if I can't understand it, I can't decide it and
15 it's not fair to either of you. And if I can't understand it,
16 I will stop you and say please go back.

17 So the simpler you start, quite frankly, the better
18 for me. This is extraordinarily helpful. One of the reasons I
19 like to do this not on the same day, particularly when there
20 are multiple patents, is because I read the briefs, then I --
21 which I usually can't make too much sense of. Then I listen to
22 this, and this is extremely helpful, it starts to kind of make
23 sense, and I'll go back and read the briefs again before you
24 come in.

25 And not always, but my intent would probably be to,

1 depending on how I feel coming out, I may just rule from the
2 bench or I may need more time to sort of think about it. Okay?
3 So that's how I intend to proceed.

4 Anything else today from plaintiff?

5 MR. NOYES: Not from us, Your Honor. Thank you very
6 much.

7 THE COURT: Anything else from the defendant today?

8 MR. ZIMMERMAN: Not from defendants, Your Honor, but I
9 do have one question for the *Markman* hearing.

10 Do you want us to go plaintiff first and then
11 defendant on all terms, or would you prefer term by term,
12 plaintiff, defendant?

13 THE COURT: It is much easier for me -- so hopefully
14 you'll agree -- to go term by term. Because I can listen to
15 what you have to say, listen to what you have to say, ask
16 whatever questions I have right then and there, then move on to
17 the next one.

18 So I would prefer that when we have multiple issues
19 like now. Is that agreeable to you both?

20 MR. NOYES: That's fine with us, Your Honor.

21 MR. ZIMMERMAN: Yes, Your Honor.

22 THE COURT: Thank you very much for asking. I do much
23 prefer that.

24 Anything else? Do we still think -- I have from 10:00
25 to 1:00 blocked off for this. Do you think that's sufficient?

1 MR. NOYES: I think that's more than sufficient.

2 MR. ZIMMERMAN: I'm hopeful we can give the Court back
3 time on that day.

4 THE COURT: I always like to have a little extra
5 because I don't want to be rushed and if I or my clerks have
6 questions.

7 So thank you for coming in early so you can
8 accommodate the criminal matter. This has been extraordinarily
9 helpful. I'll see you all in two weeks. We're adjourned.

10 THE COURTROOM DEPUTY: All rise.

11 (Matter adjourned at 1:24 p.m.)

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15 I certify that the foregoing is a correct transcript
16 from the record of proceedings in the above-entitled matter.

17

18 /S/ Sharon Ricci, RMR, CRR
19 Official Court Reporter

20 October 15, 2024
21 Date

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